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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

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ATLANTA, GEORGIA 30365

National Primary Drinking Water Regulations

The Safe Drinking Water Act (SDWA), as amended in 1986, requires EPA to publish Maximum Contaminant Level Goals (MCLGs) for contaminants which, in the judgment of the Administrator, may have any adverse effect on the health of persons and which are known or anticipated to occur in public water systems. MCLGs are to be set at a level which no known or anticipated adverse effects on the health of persons occur and which allow an adequate margin of safety.

At the same time EPA publishes an MCLG, which is a non-enforceable health goal, it must also promulgate a National Primary Drinking Water Regulation (NPDWR) which includes either (1) a Maximum Contaminant Level (MCL), or (2) a required treatment technique. A treatment technique may be set only if it is not economically or technologically feasible to ascertain the level of a contaminant. An MCL must be set as close to the MCLG as feasible. Under the SDWA, "feasible" means feasible with the use of the best technology, treatment techniques, and other means which the Administrator finds are available, after examination for effectiveness under field conditions and not solely under laboratory conditions (taking cost into consideration). NPDWRs also include monitoring, analytical and quality assurance requirements, and specifically, criteria and procedures to assure a supply of drinking water which dependably complies with such MCLs.

DEVELOPMENT OF MCLGs:

MCLGs are set at concentration levels at which no known or anticipated adverse health effects would occur, allowing for an adequate margin of safety. Establishment of a specific MCLG depends on the evidence of carcinogenicity from drinking water exposure or the Agency's noncarcinogenic reference dose (RfD), which is calculated for each specific contaminant.

From the RfD, a drinking water equivalent level (DWEL) is calculated by multiplying the RfD by an assumed adult body weight (generally 70 kg) and then dividing by an average daily water consumption of 2 liters per day. The DWEL assumes the total daily exposure to a substance is from drinking water exposure. The MCLG is determined by multiplying the DWEL by the percentage of the total daily exposure contributed by drinking water, called the relative source contribution (RSC). Generally, EPA assumes that the RSC from drinking water is 20% of the total exposure, unless other exposure data for the chemical are available.

For chemicals suspected as carcinogens, the assessment for nonthreshold toxicants consists of the weight of evidence of carcinogenicity in humans. The objectives of the assessment are (1) to determine the level or strength of evidence that the substance is a human or animal carcinogen and (2) to provide an upperbound estimate of the possible risk of human exposure to the substance in drinking water. A summary of EPA's cancer classification scheme is:

Group A - Known human carcinogen
Group B - Probable human carcinogen
Group C - Possible human carcinogen
Group D - Not classifiable
Group E - No evidence as human carcinogen

Establishing the MCLG for a chemical is generally accomplished in one of three ways depending on its categorization. Each contaminant is analyzed for evidence of carcinogenicity via ingestion. In most cases, the Agency places Group A and B contaminants into Category I, Group C into Category II, and Group D and E into Category III. However, where there is additional information on cancer risks from drinking water ingestion, additional scrutiny is conducted which may result in placing the contaminant into a different category.

EPA's policy is to set MCLGs for Category I contaminants at zero. The MCLG for Category II contaminants is calculated by using the RfD/DWEL/RSC approach with an added margin of safety (usually 10-fold) to account for cancer effects or is based on a cancer risk range of 10^{-5} to 10^{-6} when non-cancer data are inadequate for deriving a RfD. MCLGs for Category III contaminants are calculated using the RfD/DWEL/RSC approach.

DEVELOPMENT OF MCLs:

The SDWA directs EPA to set the MCL as close to the MCLG as is feasible. Based on the statutory directive for setting MCLs, EPA derives MCLs based on an evaluation of (1) the availability and performance of various technologies for removing the contaminant, (2) the costs of applying these technologies, and (3) the ability of laboratories to measure accurately and consistently the level of the contaminant with available analytical methods. Because compliance with the MCL is determined by analysis with approved analytical techniques, the ability to analyze consistently and accurately for a contaminant at the MCL is important to enforce a regulatory standard. This factor is critically important in determining the MCL for contaminants for which EPA sets the MCLG at zero, a number which by definition can be neither measured nor attained. Limits of analytical detection require that the MCL be set at some level greater than the MCLG for these contaminants.

EPA also evaluates the health risks that are associated with various contaminant levels in order to ensure that the MCL adequately protects the public health. For drinking water contaminants, EPA sets as a goal a risk range goal of 10^{-4} to 10^{-6} excess individual risk for carcinogens during a lifetime exposure (arsenic is one exception to this risk range). This policy is consistent with other EPA regulatory programs that generally target this range using conservative models that are not likely to underestimate the risk. Usually the MCLs for noncarcinogenic contaminants are set at the MCLG. Since the underlying goal of the SDWA is to protect the public from adverse effects due to drinking water contaminants, EPA seeks to ensure that the health risks associated with MCLs for all contaminants are not significant.

Additional information on this subject matter can be found in the Code of Federal Regulations (Part 141) and the January 30, 1991, Federal Register (EPA, National Primary Drinking Water Regulations; Final Rule).

Provided in the following table is an up-to-date list of all of EPA's MCLs and MCLGs, along with all of EPA's proposed MCLs, MCLGs, and Secondary MCLs. This table will be updated as necessary and the date in the top left hand corner should be checked for time of printing.

A copy of this table will be made available through Region IV's library. If you have any comments or questions about this table please call Glenn Adams at x3866.

07/19/94

CURRENT and PROPOSED MCLs, MCLGs, and SMCLs

CHEMICAL	MCL (ppm)	MCLG (ppm)	SMCL (ppm)
INORGANICS			
Aluminum (1/91)			0.05-0.2
Antimony (7/92)	0.006	0.006	
Arsenic (NPDWR)	0.050		
Asbestos(1/91)	7 MF/L (>10 um)		
Barium (7/91)	2	2	
Beryllium (7/92)	0.004	0.004	
Cadmium (1/91)	0.005	0.005	
Chloride (NSDWR)			250
Chromium (1/91)	0.1	0.1	
Color (NSDWR)			15 color units
Copper (7/91)	TT	1.3	
Corrosivity (NSDWR)			Noncorrosive
Cyanide (7/92)	0.2	0.2	
Fluoride (4/86)	4.0	4.0	2.0
Foaming Agents (NSDWR)			0.5
Iron (NSDWR)			0.3
Lead (6/91)	TT	0	
(6/90)	0.015	Action level	
Manganese (NSDWR)			0.05
Mercury (1/91)	0.002	0.002	
Nickel (7/92)	0.1	0.1	
Nitrite(as N) (1/91)	1	1	
Nitrate(as N) (1/91)	10	10	
Total (as N)	10	10	

Odor (NSDWR)			3 threshold odor #
pH (NSDWR)			6.5-8.5
Selenium (1/91)	0.05	0.05	
Silver (1/91)			0.1
Sulfate (NSDWR)			250
Sulfate (7/90)	400/500*	400/500*	
Thallium (7/92)	0.002	0.0005	
Total Dissolved Solids (NSDWR)			500
Zinc (NSDWR)			5
ORGANICS			
Acrylamide (1/91)	TT	0	
Alachor (1/91)	0.002	0	
Aldicarb (5/92)	Deferred		
Aldicarb sulfone (5/92)	Deferred		
Aldicarb sulfoxide (5/92)	Deferred		
Atrazine (1/91)	0.003	0.003	
Benzene (7/87)	0.005	0	
Benzo(a)pyrene (7/92)	0.0002	0	
Carbofuran (1/91)	0.04	0.04	
Carbon Tetrachloride (7/87)	0.005	0	
Chlordane (1/91)	0.002	0	
2,4-D (1/91)	0.07	0.07	
Dalapon (7/92)	0.2	0.2	
Dibromochloropropane (DBCP) (1/91)	0.0002	0	

* ***Proposed MCL & MCLG***

o-Dichlorbenzene (1/91, 5/89)	0.6	0.6	0.01
p-Dichlorobenzene (7/87)	0.075	0.075	
p-Dichlorobenzene (1/91, 5/89)			0.005
1,2-Dichloroethane (7/87)	0.005	0	
cis-1,2-Dichloroethylene (1/91)	0.07	0.07	
trans-1,2-Dichloroethylene (1/91)	0.1	0.1	
1,1-Dichloroethylene (7/87)	0.007	0.007	
Dichloromethane (7/92)	0.005	0	
1,2-Dichloropropane (1/91)	0.005	0	
Di(2-ethylhexyl) adipate (7/92)	0.4	0.4	
Di(2-ethylhexyl) phthalate (7/92)	0.006	0	
Diquat (7/92)	0.02	0.02	
Dinoseb (7/92)	0.007	0.007	
Dioxin (2,3,7,8-TCDD) (7/92)	$3x10^{-8}$	0	
Endothall (7/92)	0.1	0.1	
Endrin (7/92)	0.002	0.002	
Epichlorohydrin (1/91)	TT	0	
Ethylbenzene (1/91,5/89)	0.7	0.7	0.03
Ethylene dibromide (EDB) (1/91)	0.00005	0	
Glyphosate (7/92)	0.7	0.7	

* ***Proposed MCL & MCLG***

Heptachlor (1/91)	0.0004	0	
Heptachlor epoxide (1/91)	0.0002	0	
Hexachlorobenzene (7/92)	0.001	0	
Hexachlorocyclopentadiene [HEX] (7/92)	0.05	0.05	0.008
Lindane (1/91)	0.0002	0.0002	
Methoxychlor (1/91)	0.04	0.04	
Monochlorobenzene (1/91)	0.1	0.1	
Oxamyl [Vydate] (7/92)	0.2	0.2	
Pentachlorophenol (7/91,5/89)	0.001	0	0.03
Picloram (7/92)	0.5	0.5	
Polychlorinated biphenyls (PCBs) (1/91)	0.0005	0	
Simazine (7/92)	0.004	0.004	
Styrene (1/91,5/89)	0.1	0.1	0.01
Tetrachloroethylene (1/91)	0.005	0	
Toluene (1/91,5/89)	1	1	0.04
Toxaphene (1/91)	0.003	0	
2,4,5-TP Silvex (1/91)	0.05	0.05	
1,1,2-Trichloroethane (7/92)	0.005	0.003	
1,2,4-Trichlorobenzene (7/92)	0.07	0.07	
1,1,1-Trichloroethane (7/87)	0.2	0.2	

* ***Proposed MCL & MCLG***

Trichloroethylene (7/87)	0.005	0	
Trihalomethanes (NPDWR) Bromoform,Chloroform Dibromochloromethane Bromodichloromethane	0.100	0	
Vinyl Chloride (7/87)	0.002	0	
Xylenes (1/91, 5,89)	10	10	0.02
MICROBIALS			
Coliform bacteria (6/89)	<1/100 ml	0	
Giardia lamblia (6/89)	TT	0	
Heterotrophic bact. (6/89)	TT	0	
Legionella (6/89)	TT	0	
Viruses (6/89)	TT	0	
Turbidity	1 Tu (up to 5 TU)		

- ***Proposed MCL & MCLG***

RADIONUCLIDES			
Beta particle and photon radioactivity	4 mrem/ year	0	
Gross Alpha particles	15 pCi/l	0	
Radon-222 (7/91*)	*300 pCi/l	0	
Radium-226 and Radium-228 (Total)	5 pCi/l	0	
Radium-226 (7/91*)	* 20 pCi/l	0	
Radium-228 (7/91*)	* 20 pCi/l	0	
Uranium (7/91*)	* 20 ug/l or 30 pCi/l	0	

* *Proposed MCL & MCLG*

FOOTNOTES

4/86	51 FR, April 2, 1986- Final MCLs and SMCLs
7/87	52 FR, July 8, 1987 - Final MCLs and MCLGs
5/89	54 FR, May 22, 1989 - Proposed SMCLs
6/89	54 FR, June 29, 1989 - Final MCLs and MCLGs
6/90	Action level for lead in drinking water, June 21, 1990, Memorandum from the Office of Emergency and Remedial Response and the Office of Waste Program Enforcement
7/90	55 FR, July 25, 1990 - Proposed MCLs, MCLGs, and SMCLs
1/91	56 FR, January 30, 1991 - Final MCLs, MCLGs, and Proposed SMCLs
6/91	56 FR, June 7, 1991 - MCLGs & NPDWRs for lead & copper [Action levels established for lead (0.015 ppm) and copper (1.3 ppm)]
7/91	56 FR, July 1, 1991 - NPDWRs; Final Rule
7/91*	56 FR, July 18, 1991- NPDWRs for Radionuclides in Drinking Water
5/92	57 FR, May 27, 1992-Drinking Water
7/92	57 FR, July 17, 1992 - Final MCLs and MCLGs

MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
NPDWR	National Primary Drinking Water Regulation
NSDWR	National Secondary Drinking Water Regulation
SMCL	Secondary Maximum Contaminant Level
TT	Treatment Technique
TU	Units of Turbidity
MF/L	Million Fibers/Liter

* *Proposed MCL & MCLG*